

## ABSTRACT

A method for enhancing the dynamic range of a mass spectrometer by first passing a sample of ions through the mass spectrometer having a quadrupole ion filter, whereupon the intensities of the mass spectrum of the sample are measured. From the mass spectrum, ions within this sample are then identified for subsequent ejection. As further sampling introduces more ions into the mass spectrometer, the appropriate rf voltages are applied to a quadrupole ion filter, thereby selectively ejecting the undesired ions previously identified. In this manner, the desired ions may be collected for longer periods of time in an ion trap, thus allowing better collection and subsequent analysis of the desired ions. The ion trap used for accumulation may be the same ion trap used for mass analysis, in which case the mass analysis is performed directly, or it may be an intermediate trap. In the case where collection is an intermediate trap, the desired ions are accumulated in the intermediate trap, and then transferred to a separate mass analyzer. The present invention finds particular utility where the mass analysis is performed in an ion trap mass spectrometer or a Fourier transform ion cyclotron resonance mass spectrometer.